



MAIL STOP APPEAL BRIEF-PATENTS
PATENT
0595-1038

IN THE U.S. PATENT AND TRADEMARK OFFICE BEFORE
THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of	Appeal No.
Jean-Pierre BAUDRY	Conf. 8623
Application No. 10/723,064	Group 3644
Filed November 26, 2003	Examiner S. Holzen

DEVICE AND SYSTEM FOR ASSISTANCE WITHIN INTERCEPTION
BY AN AIRCRAFT OF A FLIGHT PATH SEGMENT

APPEAL BRIEF

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December 4, 2006

1. Real Party in Interest

The real party in interest in this appeal is the current assignee, Eurocopter of Marignane Cedex, France.

2. Related Appeals and Interferences

None.

3. Status of Claims

Claims 61-72 were rejected and are the subject of the present appeal. Claims 1-60 have been canceled.

4. Status of Amendments

No amendments were filed following the Final rejection of July 19, 2006.

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5. Summary of Claimed Subject Matter

Claim 61 is the only independent claim involved in the appeal. Claim 61 defines a device for assisting an airplane intercept a flight path (Figure 1 generally; page 4, lines 2-4 and page 12, lines 1-5 of the amended specification and amended Figure 1 filed with the amendment of February 3, 2005).

The device includes a calculator (element 4 in Figure 1) that calculates a ground speed vector of the airplane (page 12, line 10, page 13, lines 7-10), a display screen (6, Figure 1; page 12, line 11), and a symbol generator (9, Figure 1) connected to the calculator and that is arranged to generate the symbols that are displayed on the display screen (page 13, lines 4-6).

The symbols that the symbol generator (9) is arranged to generate and that are displayed on the display screen (6) include,

the flight path (S3) to be intercepted (Figures 2-3; page 12, line 13),

a first symbol (7) indicating a position of the airplane relative to the flight path (Figures 2-3; page 12, lines 17),

a first indicator (11) that is attached to the first symbol (7) and that is a straight line with an angular

orientation corresponding to a direction of the ground speed vector and with a length that varies and corresponds to a magnitude of the ground speed vector when the magnitude exceeds a predetermined value and that is constant and proportional to the predetermined value when the magnitude is less than or equal to the predetermined value (Figure 2; page 13, lines 11-18),

a second indicator (13) that is attached to the first indicator (11) and that is a straight line whose direction indicates an initial part of a future approach path for intercepting the flight path (S3) and whose length adjusts as the position of the airplane (7) changes relative to the flight path (S3) (Figure 2; page 13, lines 19-24), and

a third indicator (15) that extends tangentially from the second indicator (13) and that is connected tangentially to the flight path (S3), the third indicator (15) being a curved line indicating a final part of the future approach path for intercepting the flight path (Figure 2; page 14, lines 1-3).

The dependent claims provide that the symbol generator is also arranged to display further symbols or to operate in a particular way and thus further define the structure of the symbol generator.

Claim 62 provides that the symbol generator is arranged to display the second indicator only when the direction

of the ground speed vector intercepts the flight path and only when the airplane is less than a predetermined distance from the flight path (page 7, lines 15-20, page 14, lines 14-21).

Claim 63 provides that the symbol generator is arranged to display the third indicator only when the direction of the ground speed vector intercepts the flight path and only when the airplane is less than a predetermined distance from the flight path (page 15, lines 15-20).

Claim 64 provides that the symbol generator is arranged so that a curvature of the third indicator depends on at least one of an airspeed of the airplane, a turning capability of the airplane, and wind speed and direction (page 8, lines 5-7).

Claim 65 provides that the symbol generator is arranged to display the third indicator only when the curvature of the third indicator is achievable by the airplane (page 15, line 21).

Claim 68 provides that the symbol generator is arranged to generate the further symbols including, a straight line segment (S3) of the flight path to be followed, where the first symbol indicates a lateral deviation of the airplane from the flight path to be followed by a relative position of the first symbol to the straight line segment, a lateral deviation

scale (21, Figure 4), and an excessive lateral deviation marker (24, Figure 4) that appears when the airplane is approaching one of the tolerated lateral margins (page 16, line 15 through page 17, line 5).

6. Grounds of Rejection to be Reviewed on Appeal

Claims 61-72 were rejected under 35 U.S.C. 103 as unpatentable over CARRIKER et al. 2003/0004619 in view of CRONKHITE et al. 5,308,022.

Claim 66 was further rejected under 35 U.S.C. 103 as unpatentable over CARRIKER et al. in view of CRONKHITE et al. and KRUMES et al. 5,465,142.

7. Argument

(a) Rejection of Claims 61-72 under §103

(i) Claim 61

CARRIKER et al. discloses a flight path information system (0001) and shows in Figure 9A a track followed by aircraft as it intercepts a flight path. As acknowledged by the Examiner, there is no suggestion in this reference to actually display this track to the pilot, and the Examiner relies on CRONKHITE et al. for the suggestion to modify the display in CARRIKER et al. to include a display of this track (last two paragraphs of page 7 of the July 19, 2006 Official Action).

The track in Figure 9A is the actual flight path of the aircraft and includes the flight path that is to be intercepted and a first symbol indicating a position of the airplane relative to the flight path. The track in Figure 9A (assuming that it is displayed) still would not include a first indicator that is attached to the first symbol (the aircraft in Figure 9A) and that is a straight line with an angular orientation corresponding to a direction of the ground speed vector and with a length that varies and corresponds to a magnitude of the ground speed vector when the magnitude exceeds a predetermined value and that is constant and proportional to the predetermined value when the magnitude is less than or equal to the predetermined value.

The Examiner indicates that the line segment IND1 of Figure B in the Official Action of July 19, 2006 is this first indicator of claim 61. However, even if line segment IND 1 is a straight line with an angular orientation corresponding to a direction of the ground speed vector (and there is no indication in the references that it is), there is nothing to motivate the artisan to provide this line segment with a length that corresponds to a magnitude of the ground speed vector when the magnitude exceeds a predetermined value and that is constant and proportional to the predetermined value when the magnitude is

less than or equal to the predetermined value.

The Examiner also indicates that line segments IND2 and IND3 (taken from Figure 9A of CARRIKER et al.) correspond to the second and third indicators of claim 61. However, among other differences, the second and third indicators show parts of a future approach path for intercepting the flight path. The line segments IND2 and IND3 do not show a future approach path for intercepting the flight path. Figure 9A of CARRIKER et al. is an example of how an aircraft can approach a flight path (0065) and shows aircraft positions corresponding to the aircraft displays shown in Figures 9B-D. There is no motivation to display two indicators that are attached to the first indicator and that are part of a future approach path, where the third indicator is connected tangentially to the second indicator and to the flight path to be intercepted. The knowledge that an aircraft may fly a route to intercept a flight path is not motivation to display the future route with the specific symbol and indicators claimed in claim 61.

The Examiner states that no patentable weight is given to the symbol and indicators because they are nothing more than lines. However, the claims provide that the symbol generator is arranged to generate the first symbol and second and third indicators (not that it is merely capable of doing so). The

prior art must disclose a symbol generator that is arranged to actually generate these features. There is no art that includes such a symbol generator and thus claim 61 avoids the rejections under §103.

(ii) Claims 62-72

These are dependent claims that further provide that the symbol generator is also arranged to display further symbols or to operate in a particular way. The claims further define the structure of the symbol generator.

Claims 62, 63, and 65 provide that a respective indicator is displayed only when a specified criteria is met. The references do not disclose or suggest the claimed criteria and thus they are not obvious to one of skill in the art.

Claim 64 provides that the curvature of the third indicator depends on particular factors. The references do not disclose or suggest making the curvature of the future approach path depend on the particular factors claimed and thus the claim is not obvious to one of skill in the art.

Claims 67 and 72 are allowable for the reasons given for claim 61.

Claims 68-71 provide that the symbol generator is arranged to generate a lateral deviation scale and an excessive lateral deviation marker. There is no suggestion in the

references to provide a symbol generator that is arranged to generate these additional features and thus the claims avoid the rejection under §103.

(b) Rejection of Claim 66 under §103

Claim 66 depends from claim 61 and is allowable for the reasons given above.

In view of this, it is believed that the rejections of record cannot be sustained and that the same must be reversed and such is respectfully requested.

The claims involved in the appeal are set forth in the Claims Appendix.

There are no copies of evidence in the Evidence Appendix.

There are no copies of decisions in the Related Proceedings Appendix.

Respectfully submitted,

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8. Claims Appendix

The claims on appeal:

61. A device for assisting an airplane intercept a flight path, the device comprising:

a calculator that calculates a ground speed vector of the airplane;

a display screen; and

a symbol generator connected to said calculator and that is arranged to generate symbols that are displayed on said display screen, the generated symbols including,

the flight path that is to be intercepted,

a first symbol indicating a position of the airplane relative to the flight path,

a first indicator that is attached to said first symbol and that is a straight line with an angular orientation corresponding to a direction of the ground speed vector and with a length that varies and corresponds to a magnitude of the ground speed vector when the magnitude exceeds a predetermined value and that is constant and proportional to the predetermined value when the magnitude is less than or equal to the predetermined value,

a second indicator that is attached to said first indicator and that is a straight line whose direction indicates

an initial part of a future approach path for intercepting the flight path and whose length adjusts as the position of the airplane changes relative to the flight path, and

a third indicator that extends tangentially from said second indicator and that is connected tangentially to the flight path, said third indicator being a curved line indicating a final part of the future approach path for intercepting the flight path.

62. The device of claim 61, wherein said symbol generator is arranged to display said second indicator on said display screen only when the direction of the ground speed vector intercepts the flight path and only when the airplane is less than a predetermined distance from the flight path.

63. The device of claim 61, wherein said symbol generator is arranged to display said third indicator on said display screen only when the direction of the ground speed vector intercepts the flight path and only when the airplane is less than a predetermined distance from the flight path.

64. The device of claim 61, wherein said symbol generator is arranged so that a curvature of said third indicator depends on at least one of an airspeed of the airplane, a turning capability of the airplane, and wind speed and direction.

65. The device of claim 64, wherein said symbol generator is arranged to display said third indicator on said display screen only when the curvature of said third indicator is achievable by the airplane.

66. The device of claim 61, further comprising an obstacle detector and wherein said symbol generator is further arranged to generate a second symbol indicating a position of an obstacle detected by said obstacle detector.

67. The device of claim 61, wherein the device is arranged and adapted to transmit flight information for intercepting the flight path to an autopilot that controls movement of the airplane.

68. The device of claim 61, wherein the device further assists the airplane to follow a flight path, and wherein said calculator calculates a lateral deviation of the airplane from the flight path to be followed and tolerated lateral margins on both sides of the flight path to be followed, and said symbol generator is arranged to generate the further symbols including,

a straight line segment of the flight path to be followed, said first symbol indicating a lateral deviation of the airplane from the flight path to be followed by a relative position of said first symbol to said straight line segment,

a lateral deviation scale, and
an excessive lateral deviation marker that appears when the airplane is approaching one of said tolerated lateral margins.

69. The device of claim 68, wherein said symbol generator is arranged so that a distance indicated by said lateral deviation scale adjusts automatically as a flight corridor width defined by said tolerated lateral margins changes.

70. The device of claim 68, wherein said symbol generator also is arranged to generate slanted lines indicating a change in a width of a flight corridor defined by said tolerated lateral margins.

71. The device of claim 68, wherein said symbol generator also is arranged to generate a lateral drift indicator that represents a lateral drift speed of the airplane, said lateral drift indicator being attached to said first symbol and varying in length in proportion to the lateral drift speed.

72. The device of claim 68, wherein the device is arranged and adapted to transmit flight information for following the flight path to an autopilot that controls movement of the airplane.

9. Evidence Appendix

None.

10. Related Proceedings Appendix

None.